

# Model-Based Engineering Session

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# Safety-Critical Software, facts

Safety-Critical Systems are becoming software

Today's cars usually contains more

Application in all domain (a)

Software size is growing

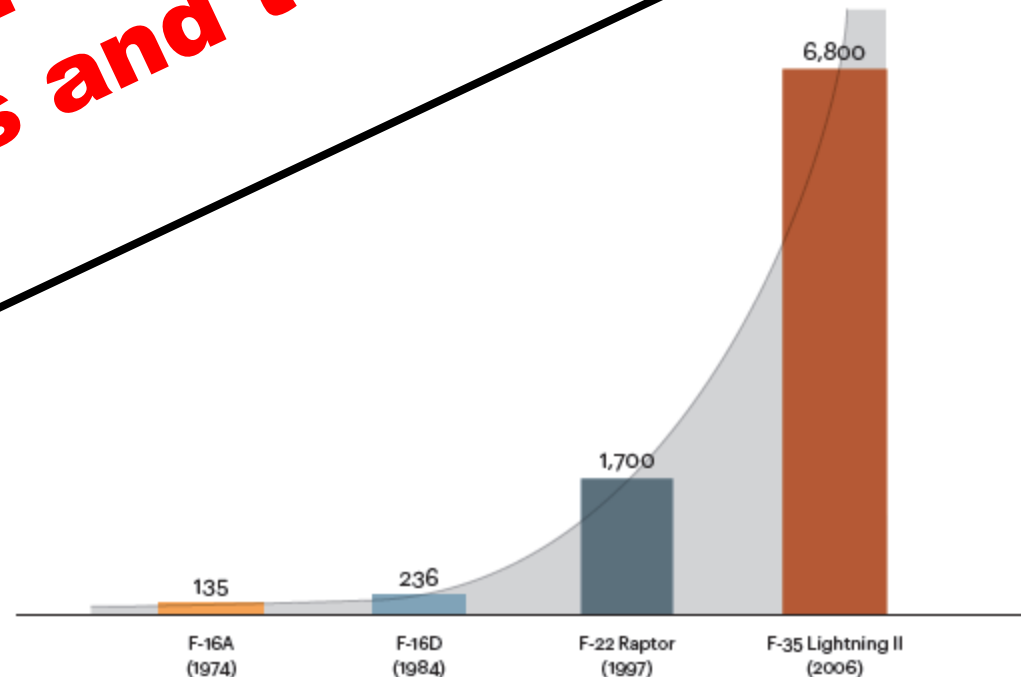
... but

Increase

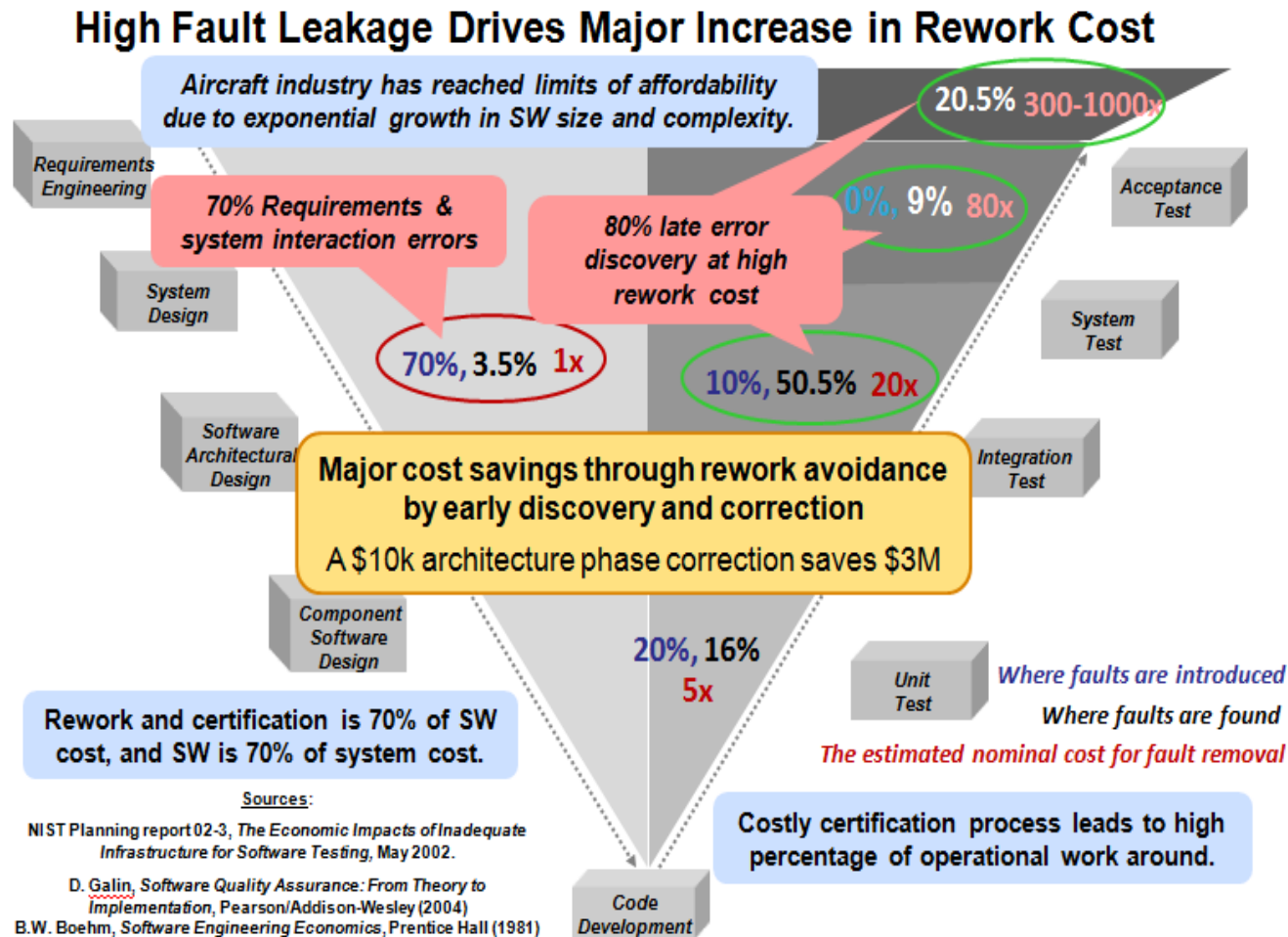
Le

Work

**Need to find new development methods and tools**



# Understanding Actual Software Issues



# The Model-Based Approach

## Abstract System Representation

Hide and delegate implementation details to tools

Highlight Software or System important concerns

## Separate domains of engineering

Functional models for representing control laws

Architecture models to validation components deployment

## Automate the development process

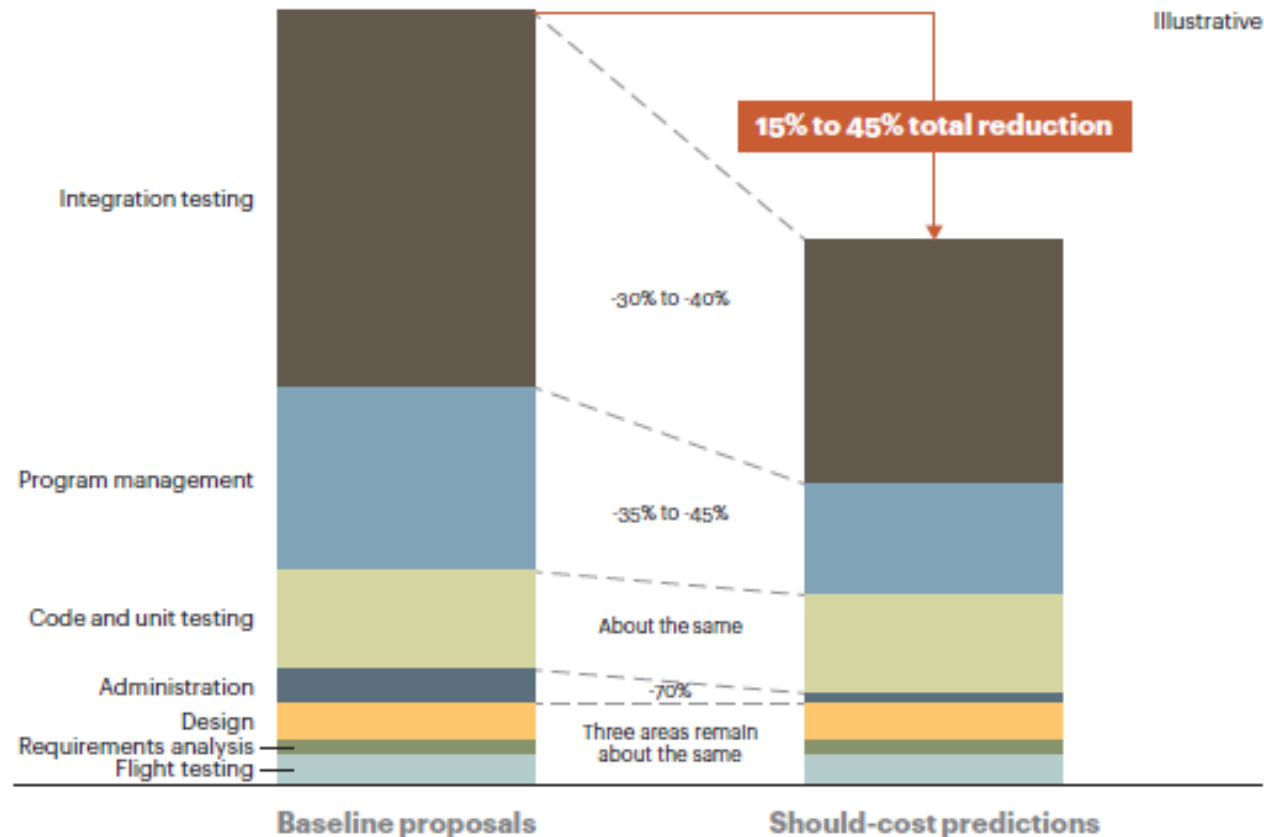
Avoid manual efforts (code production, system validation)

Support each development step (design, development, etc.)



# Model-Based Cost Expected Benefits

Should-cost modeling identifies significant potential savings



# Model-Based, other benefits

## Management of Product Lines

- Components variability

- Reuse of existing certification/validation artifacts

## Detect components integration issues

- Before implementation efforts

- Check system requirements enforcement before testing

## Facilitate validation/verification/certification activities

- Generation of documentation

- Use of Model-Based Verification





# Model-Based Engineering at HILT2014

- *“AADL and Model-Based Engineering”* - **Peter Feiler**
- *“Resolute: An Assurance Case Language for Architecture Models”* – **John Backes**
- **More to come after!**
- **5 papers (almost 50%! ) have a focus on Model-Based Engineering**
- **Common objectives with the initial SIGAda conference**



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